

Customer No.: 31561
Application No.: 10/707,704
Docket NO.: 11964-US-PA

In The Claims:

Claims 1-8 (canceled)

Claim 9. (currently amended) A non-volatile memory device, comprising:

a substrate, wherein the substrate has a trench;

a gate disposed over and completely filling the trench;

a bottom oxide layer disposed between the gate and the trench surface;

a charge-trapping layer disposed between the gate and the bottom oxide layer;

a top oxide layer disposed between the gate and the charge-trapping layer;

and

a plurality of source/drain regions ~~configured in the substrate outside the gate~~ located at both sides of the trench in the substrate.

Claim 10. (original) The non-volatile memory device of claim 9, wherein the gate extends over a portion of the substrate outside the trench.

Claim 11. (currently amended) The non-volatile memory device of claim 10, wherein bottom oxide layer further extends out of the trench and is disposed between the gate and the substrate.

Claim 12. (original) The non-volatile memory device of claim 9, wherein the

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device further comprises a plurality of spacers located on the sidewalls of the gate.

Claim 13. (original) The non-volatile memory device of claim 12, wherein the device further comprises a plurality of lightly doped regions located in the substrate underneath the spacers.

Claim 14. (original) The non-volatile memory device of claim 12, wherein material constituting the spacers comprises silicon nitride.

Claim 15. (original) The non-volatile memory device of claim 9, wherein material constituting the gate comprises polysilicon.

Claim 16. (original) The non-volatile memory device of claim 9, wherein material constituting the charge-trapping layer is selected from the group consisting of a nitride compound, tantalum oxide, titanium strontium and hafnium oxide.

Claim 17. (original) The non-volatile memory device of claim 9, wherein the device further comprises a silicide layer disposed on the gate surface.

Claim 18. (original) The non-volatile memory device of claim 17, wherein material constituting the metal silicide layer is selected from the group consisting of

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cobalt silicide, titanium silicide, tungsten silicide, molybdenum silicide, platinum
silicide and nickel silicide.